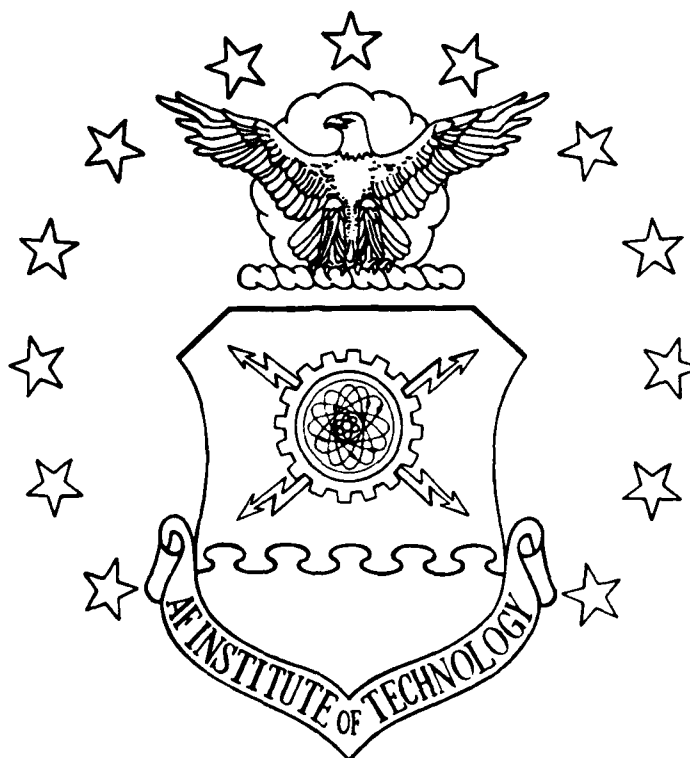


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A COMPARATIVE STUDY OF THE PERCEIVED USEFUL-
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TED GRADUATE PROGRAMS BY GRADUATES AND THE
PERCEIVED USEFULNESS OF THE AFIT CAM PROGRAM
BY GRADUATES

THESIS

Thomas S. Graham
Captain, USAF

AFIT/GLM/LSQ/85S-29

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PROGRAM BY GRADUATES
THESIS

Presented to the Faculty of the School of Systems and
Logistics of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

Thomas S. Graham, B.S., M.S.
Captain, USAF

September 1985

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Acknowledgments

The author is indebted to a number of hard-working individuals for their valuable contributions during the preparation of this thesis. Special thanks are sent out to Captain Wendy Motlong, my thesis advisor. Without her speed, accuracy, expertise, and patience I might still be scratching my head in despair. Also, my readers, Lieutenant Colonel Gary Delaney and Captain John Campbell, gave invaluable assistance to me during the ordeal. Lastly, and most importantly, I extend immeasurable thanks to my wife, Margaret, and my daughter, Catherine, for always being there.

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Abstract

Contracting officers must be educated on the principles of acquisition management and must know how their jobs relate to the well-being of the United States Air Force and to the defense of the United States and our allies. This need for educated, well-trained contracting officers is met by the Air Force Institute of Technology (AFIT) Contracting and Manufacturing resident program and by civilian institution contracting-related programs. This research study focused on a comparison of the two different contracting-related graduate programs. A background of the AFIT Contracting and Manufacturing program and a background of each of three civilian institution contracting-related graduate programs were presented. Then, the results of a survey of active duty Air Force civilian institution contracting-related graduate program graduates were analyzed. These results were then compared to results of a previous survey of AFIT resident program graduates. The two groups were compared in four sections: Demographics, Perceptions, Course Usefulness, and Open-ended Questions. Lastly, conclusions and recommendations based upon the data analysis are presented.

A COMPARATIVE STUDY OF THE PERCEIVED USEFULNESS OF
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BY GRADUATES AND THE PERCEIVED USEFULNESS OF THE AFIT CAM
PROGRAM BY GRADUATES

I. The Research Problem

Introduction

As the United States Air Force evolves into a highly technical and complex organization, with a large portion of the budget earmarked for defense, there is an ever-growing need for highly skilled contracting officers. The Honorable Verne Orr, Secretary of the Air Force, emphasizes the importance of top-notch contracting officers this way:

Buying weapons and parts the Air Force needs is a formidable task. Because the need to bring our defenses to their peak levels is essential to our nation's safety, we must do it wisely and with the utmost care. Only then will we retain the public support so necessary in our democratic society. Recognizing that operating the Air Force in the world of business requires us to use good business techniques, we are devoting increased management attention toward improving how we use those techniques.(24:14)

Contracting officers must be educated on the principles of management and must know how their jobs relate to the well-being of the Air Force and to the defense of the United States and our allies. This need for educated, well-trained contracting officers and future managers is met in part by

the Air Force Institute of Technology (AFIT) resident program with civilian institutions "picking up the slack". Although civilian institutions offer masters degrees in many specialties, it is the contracting/procurement-related area of study to which this research effort will be confined.

Throughout the Air Force, there are positions which using commands feel warrant an individual with advanced education (masters degree or higher) in a particular field of study. The Air Force currently has 89 billets designated as positions requiring a masters degree in a contracting/procurement area of specialization (25). These contracting-related masters degree slots are coded with an Advanced Academic Degree Code of 1AMH/P. Most of these 1AMH/P positions are currently staffed by graduates of the AFIT Contracting and Manufacturing Management (CAM) option of the Master of Logistics Management program; however, the positions are open to any officer with a 1AMH/P designator. Currently, there are 255 active duty Air Force officers with this code. With 255 personnel available to fill 89 positions, an oversupply of active duty Air Force officers seems apparent.

The procedure for allocating education slots for the AFIT CAM graduate option involves comparing the number of available personnel with 1AMH/P codes to force requirements. If all 255 Air Force officers with this code are actually qualified to fill the 1AMH/P slots, it seems there is little

need to continue the CAM option at AFIT, especially when civilian institutions can seemingly accomplish the same kind of contracting/manufacturing educational emphasis. The oversupply dilemma may hinge upon how graduates of civilian contracting-related programs perceive the utility of their graduate programs in their postgraduate assignments and how these individuals are actually employed in the Air Force.

This research effort will try to determine if the 255 personnel assigned 1AMH/P codes are equally qualified to hold 65XX positions. AFIT CAM graduates who are specifically educated to fill these 1AMH/P slots will be compared to the graduates of contracting-related graduate programs from civilian schools.

The results of this research effort could be used by the AFIT CAM faculty, including the AFIT CAM Option Coordinator, to increase the usefulness of the AFIT curriculum as necessary. If, for example, there is an area the civilian institutions stress that is deemed essential by civilian institution graduates, the AFIT faculty may want to consider incorporating changes into the AFIT curriculum based upon those findings. AFIT is constantly striving for improvements so a superior product is sent into the field.

Another area this research effort may impact is the issue of Advanced Academic Degree code requirements versus the available qualified personnel to fill those requirements. The Air Force Military Personnel Professional

Education (AF/MPPE) office at the Pentagon periodically convenes a board to decide how many billets to code 1AMH/P. This board receives inputs from each command on how many positions should have a person assigned who has an advanced degree in a contracting-related area of study (16). As mentioned earlier, there are 255 officers with a 1AMH/P code and only 89 positions requiring an individual with a 1AMH/P code (25). Some of these 89 positions are filled by civilian institution graduates with an 1AMH/P code. If this research effort shows that the civilian institution graduates are not prepared or not competent to fill the 1AMH/P billets, the situation needs to be brought to the attention of Air Force Military Personnel Center (AFMPC) personnel as well as AF/MPPE. This study could have an effect on how these 1AMH/P billets are filled in the future or how the civilian institution contracting-related graduate program graduates are coded upon completion of their degrees.

Problem Statement

A measure of civilian institution contracting-related program usefulness from the viewpoint of the graduates of these programs did not exist. As a result, it was not known how well these civilian institution contracting-related programs had achieved educational goals, nor was it known how the graduates' perceptions of the civilian institution programs compared with the perceptions of the AFIT CAM

program graduates. Furthermore, a demographic profile of civilian institution contracting-related graduates did not exist. This profile was needed to compare the civilian institution contracting-related graduate program graduates to the demographic profile of the AFIT CAM program graduates.

Objectives of the Research

A critical element of any educational program is the measure of its usefulness(17:6; 32:96). The main objective of this research effort was to determine the usefulness of civilian institution contracting-related graduate programs. Supporting objectives are to:

1. Determine the usefulness of civilian institution contracting-related graduate programs as perceived by the graduates of these programs.
2. Compare the usefulness of civilian institution contracting-related graduate programs as perceived by their graduates to the usefulness of the AFIT CAM graduate program as perceived by AFIT graduates.
3. Determine if AFIT CAM graduates are better prepared to use their contracting-related graduate degrees than civilian institution graduates.
4. Determine if the IAMH/P Advanced Academic Education coded assignments should be limited to AFIT CAM graduates.

Review of Programs

Now that the reader has a basic understanding of the problem this research effort is attempting to examine, it would be beneficial to review the AFIT CAM program and the three civilian institution contracting-related programs which are used in this study. Also, a brief background on the AFIT CAM program gives insight into how the program evolved over the past thirteen years.

AFIT CAM Program. The following background on the AFIT CAM program will give the reader a brief overview of how the program started, why it started, and how it has changed since the idea of advanced procurement education was conceived in 1972.

The current program has a GCM identifier, but for the purpose of this research effort, CAM is used to identify the AFIT Logistics Management Program's Procurement, Contracting and Acquisition, or Contracting and Manufacturing options.

In 1972, the Air Force Director of Procurement Policy, Major General Trimble, asked the Air Force Director of Procurement Policy (AF/DPT) to investigate the feasibility of a concentrated graduate level program in procurement management to better meet the needs of the procurement field (27). Personnel at AFIT developed the curriculum for the program, called the Graduate Logistics Management Program (Procurement major). The first class graduated in 1974 with a masters degree in Logistics Management with an emphasis in

procurement. The program went through various curriculum changes over the next few years to make it a more valuable asset to the Air Force and to the Department of Defense. One of the changes which fine tuned the program was the inclusion of a course in Systems Production Management which emphasized the interrelationships in the systems acquisition life cycle (11). In 1980, there was a name change from Procurement to Contracting and Acquisition Management to distinguish the AFIT CAM program from various civilian institutions which offered a masters degree in Procurement Management (16). This name remained in place until it was changed in fiscal year 1983 to Contracting and Manufacturing Management to reflect the increased emphasis in the curriculum on the manufacturing process aspects of the system acquisition process (16).

The AFIT CAM curriculum uses logistics courses and general management courses as a foundation. This logistics management program is supplemented with unique courses for the procurement/contracting/manufacturing major. The objective of the AFIT CAM program is to develop knowledge, skills, and attitudes for improved procurement management in the United States Air Force (3:59).

The current AFIT CAM program is fifteen months in duration and consists of two four-week sessions and five eleven-week quarters. The first four-week session consists of review and overview courses to give every student a basic

understanding of a variety of courses. The second four-week session is held one year later and is inserted into the curriculum to give the graduate students an opportunity to do concentrated research on their theses(1:55). AFIT

Pamphlet 53-20 describes the AFIT CAM program as follows:

The graduate curriculum for the Contracting and Manufacturing Management major consists of 11 integrated core courses, two electives, four option specific courses and 12 hours of thesis study. Core courses extend students' knowledge and understanding of quantitative methods, logistics interrelationships, and management concepts. The option specific courses permit students to investigate areas of contracting in greater depth. Electives are designed to broaden students' interests or to provide in-depth study in a specific area. Theses topics typically address current contracting and acquisition managements problems and provide the opportunity to conduct practical research. Many theses topics are provided by DoD/USAF agencies interested in sponsoring student research. The typical curriculum for the AFIT CAM major is listed below by course category:

Core Courses

- Applied Statistics for Managers I
- Applied Statistics for Managers II
- Quantitative Decision-Making
- Computer Programming for Managers
- Management and Behavior in Organizations
- Federal Financial Management and
Managerial Accounting
- Economic Analysis and Public Policy
- Maintenance and Production Management
- Distribution Management
- Logistics Systems Overview
- Contracting and Acquisition Management

Option Specific Courses

- Cost and Price Theory
- Legal Aspects of Contracting
- Seminar in Acquisition Management
- Contract Management Theory

Research Courses

- Research Orientation
- Research Methods
- Independent Study

Elective Courses (2:3)

This information on the background of the AFIT CAM program and on the curriculum should give the reader an idea of how the program evolved and what subject areas the curriculum stresses. The civilian institutions also need to be examined for the reader to adequately compare the educational emphasis of the AFIT CAM program to that of the civilian institutions contracting-related programs.

Civilian Institutions. To give the reader an understanding of how the three civilian institution contracting-related programs compare to the AFIT CAM program, the following sections provide some information on the three civilian institution contracting-related programs. These three programs, Webster University, Florida Institute of Technology, and Western New England College, were identified as the predominate civilian institution sources of contracting-related degrees in a computer search of all active duty Air Force personnel with 1AMH/P codes.

Webster University. Webster University is accredited by the North Central Association of Colleges and Schools(1925) to offer degrees on both the undergraduate and masters degree levels at all locations where the University offers academic programs (30:43).

The contracting-related graduate program at Webster University offers a Master of Arts in Business Administration and Management, with a concentration in Procurement and Materials Management. The program is

offered at the main campus in St. Louis, Missouri, as well as the following locations: Brooks AFB, Texas; Kirtland AFB, New Mexico; Peterson AFB, Colorado; and Scott AFB, Illinois.

The curriculum is designed to provide a "broad theoretical and applied background in the managerial disciplines required to manage effectively the development, procurement, contracting and channeling of material, services and major systems" (30:44). The program draws upon course offerings from other areas to complement specialized courses in this core.

The student must take the following courses for a concentration in procurement and materials management:

- Procurement and Materials Management
- Procurement Contract Law
- Systems Procurement and Project Management
- Operations Management and Quality Assurance
- Pricing and Negotiations
- Materials Management
- Integrated Studies in Procurement and Materials Management

In addition, the student chooses elective courses offered in this area of concentration and/or from the program curricula of other areas of concentration. A thesis is optional at Webster University. Six semester hours are allowed for a thesis. The thesis option may be exercised after the student completes the required Webster University courses for the respective core. Theses may not be substituted for core courses with the exception of the Integrated Studies course (30:44).

Florida Institute of Technology. Florida

Institute of Technology (F.I.T.) was accredited by the Southern Association of Colleges and Schools in 1965. The contracting-related graduate program at the University is a Master of Science program in Contract and Acquisition Management. The Contract and Acquisition Management program was developed with the assistance of the National Contract Management Association National Education Committee to provide the educational foundation for the professional practice of contract and acquisition management (15:51). The program draws upon course offerings from the Systems Management curriculum and the Master of Business Administration curriculum to complement specialized contracting-related courses (15:51).

The Master of Science program is designed primarily for the individual with an undergraduate degree and presently working in the contract and acquisition management and administration fields. "However, those individuals engaged in related fields, such as program management, or whose present position requires a more detailed knowledge of contract management are welcome." (15:52) The degree is conferred upon students who have successfully completed 48 quarter hours of approved graduate work.

The following courses are required of all students in this program:

Financial Accounting
Financial Management and Control

Economic Environment and Management 1 (Microeconomics)
Management Theory and Thought
Behavioral Science and Management
Procurement and Contract Management
and Administration 1
Procurement and Contract Management
and Administration 2
Contract Changes, Terminations, and Disputes
Cost Principles, Effectiveness and Control
Contract and Subcontract Formulation
Contract Management and Research Seminar
Contract Negotiation
Incentive Contracts

The remaining three elective courses may be taken, with the faculty adviser's approval, from other offerings in the Department of Management or other related departments (Operations Research, Computer Science, Psychology) (15:52). F.I.T. has no thesis requirements. F.I.T. offers the courses for its Master of Science degree in Contract and Acquisition Management at the main campus in Melbourne, Florida, but has no Air Force base extension programs.

Western New England College. Western New England College is accredited by the New England Association of Schools and Colleges. Its School of Business Administration is a member of the American Assembly of Collegiate Schools of Business (31:39). Western New England College offers a Master of Business Administration with a concentration in Acquisition and Contracting. The goal of this program is to provide personnel with the broad understanding of federal policy, business strategy and system complexities. The degree program provides the student with an overall understanding of business operations, improves the student's

analytic decision-making and communication skills, and enables the student to better understand the many economic, social, legal, technical and political considerations present in the field of federal acquisition (31:39).

The following courses are required in order to obtain the Master of Business Administration with a concentration in Acquisition and Contracting:

- Economic Foundations
- Financial Accounting 1
- Management Theory and Concepts
- Applied Statistics
- Information Systems
- Marketing Concepts
- Managerial Accounting
- Federal DOD Budget
- Concepts in Managerial Economics
- Organizational Behavior
- Business Policies
- Quantitative Methods with Computer Applications
- Principles of Government Contracting
- Electives(3 graduate level acquisition and contracting courses)

There is no thesis requirement in this program.

Western New England offers two off-campus locations where this degree can be obtained; Hanscom AFB, Massachusetts, and Fort Devins, Massachusetts. Both of these locations are relatively close to the main campus.

Literature Review

The review of the literature for this research study entailed a review of previous similar AFIT School of Systems and Logistics thesis efforts. The researcher found eight similar studies accomplished by former AFIT School of Systems and Logistics students. Of those eight studies,

only one compared an AFIT program to similar programs in civilian institutions.

In a 1965 thesis, Lieutenant Colonel Allen C. Hart studied graduates of the AFIT School of Systems and Logistics Graduate Logistics Program. Hart found the Graduate Logistics program

fulfilled the role, mission, and objective for which it was designed. It does provide an education to selected logisticians and will provide each student with the managerial tools, both quantitative and qualitative, necessary to solve complex logistics and weapon systems problems. (20:57)

One major finding from this research was that Graduate Logistics Program graduates had been better utilized than had non-graduates of equal rank and experience. The graduates had been assigned to jobs requiring more knowledge, skill, and responsibility (20:55). Hart obtained his research information through the use of a survey and statistical analysis.

A similar study was completed in 1968 by Lieutenants Cook and Greene. Their thesis examined the graduates of the AFIT Graduate Logistics Programs of 1965, 1966, and 1967. The researchers basically drew the same conclusions as Hart. The graduates, through a research questionnaire, expressed a definite need for AFIT to concentrate more efforts in the communicative skills area. The option was not changed to reflect the researcher's findings; however, AFIT does now state, as a formal educational objective of the program, the ability to effectively communicate orally (4:210). This

formal objective came eighteen years after Cook and Greene's recommendation to concentrate more efforts on the communicative skills areas. Whether this objective evolved from theses research or from annual evaluation reports which survey AFIT graduates during the year following graduation is unknown.

The next related study was done in 1971 by Captains Hale and Rooney. Their objective was to determine if the performance of graduates of the School of Systems and Logistics was significantly better than the performance of a comparable group of officers who did not have a graduate degree from AFIT. The results of the study supported their conclusion that the graduates' performance was superior to that of the non-graduates, especially in the areas of decision-making, performance style, planning, communication, and general evaluation. They used a written survey, coupled with personal interviews, to gather the data necessary for their study (19:41).

Seven years passed before another similar study was undertaken. Crowder and Davidson analyzed the usefulness of the Graduate Logistics program as perceived by alumni and their supervisors. Supervisors and graduates were in agreement concerning the issue of usefulness of an AFIT graduate degree. Both groups felt it was moderately useful to them in their jobs. Interestingly, the majority of graduates perceived their AFIT education could be better

utilized in an assignment other than their current one (9:57).

The following year (1979), Brown and Hollingsworth dealt with the same issues. Their research question was, "How useful is a graduate degree in Logistics Management to graduates of an AFIT in-residence program at Wright-Patterson AFB, Ohio?" Through a mailed questionnaire, the authors were able to answer the question. Some key results and conclusions drawn from the survey were: Graduates felt their promotion potential increased dramatically, the courses were worthwhile, and the graduates' supervisors felt the graduates' assignments were inappropriate in light of the education the graduates had received (7:57).

In 1980, Johns and Ray compared the usefulness of the AFIT resident program in Facilities Management to similar programs in civilian institutions. Both groups felt the same regarding their programs. The AFIT in-residence graduates felt fortunate that their program was Air Force oriented, while civilian institution graduates felt less fortunate because their programs were not oriented towards the Air Force and the Department of Defense. It was difficult for civilian institution graduates to see some of the applications of the courses taught in these civilian institutions, such as Civil Engineering Contracting, General Logistics, and Environmental Analysis (21:56).

In 1981, Speck narrowed his thesis topic to an analysis of the perceived utility of an AFIT graduate degree in Systems Management. Overall, graduates felt their degrees were useful to them and to the Department of Defense, but there were shortfalls in their graduate programs. The graduates felt they were weak in oral communication skills and in the area of contract management theory (26:53). [Note: Systems Management students still do not take a contracting course.]

The last major research effort was completed in 1982 by Gillette and Wayne. They analyzed the AFIT Contracting and Acquisition Management program usefulness as perceived by graduates and their supervisors. Both groups felt the education was beneficial to them. The supervisors were disappointed in the lack of communication skills in the graduates, especially in the area of oral communication.

As can be seen from this literature review, there have been numerous research efforts undertaken in the past twenty years which have examined perceived utility of graduate programs by graduates. The majority of the studies in this section drew similar conclusions. Most of the studies concluded the education was beneficial to the graduates, but the graduates' supervisors thought the graduates' communicative skills were weak, especially oral communication. In most cases, these survey results did not change the courses offered; however, the changes within each

course are unknown. The research of Gillette and Wayne provided the motive for this author's effort (17:107).

Justification

Feedback from the graduates' standpoint is essential to validate the benefits of the graduate programs (17:9). Several previous research efforts have focused on perceived usefulness of programs in the AFIT School of Systems and Logistics. One study compared the usefulness of the Facilities Management program, which no longer exists, to similar programs in civilian institutions as perceived by former students. However, no research study has been conducted comparing the usefulness of the AFIT CAM program to similar programs in civilian institutions.

There is currently an Air Force problem concerning graduate degrees in contracting. A contracting-related graduate degree has 1AMH/P as its Advanced Academic Degree code. Currently, AFIT in-residence CAM graduates, as well as civilian institution contracting-related graduate program graduates, can obtain a 1AMH/P code (11). The problem lies in the 1AMH/P positions available. There are, at the present, 89 positions in the Air Force requiring an Advanced Academic Degree code of 1AMH/P and there are currently 255 active duty Air Force officers with that same code (25).

This study will determine the degree to which the graduates of the civilian institution programs feel their degree is, and/or will be, of use to them, the demographics

of this group, and the utility of their graduate courses in postgraduate assignments. The research will also compare the two different groups of graduates, which is of importance and interest to AF/MPPE and the AFIT Faculty.

The graduate faculty of the Department of Contract Management and the AFIT Contracting and Manufacturing Option Coordinator are interested in this situation for two reasons. It could impact the AFIT curriculum and it could affect the available number of slots for AFIT CAM students, both of which directly affect their future and the future of their programs at AFIT.

The Commander of the Air Force Military Personnel Professional Education(AF/MPPE) office is interested because the oversupply problem originates at that office and the decision to change the 1AMH/P requirements and codes is made at that office. Although AF/MPPE obtains inputs from the commands on the commands' needs for Advanced Academic Degree coded positions and personnel, final decisions are made at the AF/MPPE office. This research effort would be a tool AF/MPPE could use when making decisions on 1AMH/P slot availability. With the drastic oversupply of Air Force officers with a 1AMH/P code, the possibility of making changes/deletions to the AFIT requirements may become a reality.

Research Questions

There are four research questions this study will attempt to answer through a survey of graduates from civilian institution contracting-related graduate programs. These four research questions are as follows:

1. What is the demographic profile of active duty Air Force civilian institution contracting-related graduate program graduates?
2. What are the perceptions of active duty Air Force graduates from civilian institution contracting-related graduate programs regarding the usefulness of their contracting-related education in postgraduate assignments?
3. What are the most/least useful subject areas in the civilian institution contracting-related curricula as perceived by active duty Air Force military graduates?
4. How do the responses to the questions on overall perceived utility of graduate program from AFIT CAM graduates compare with responses to similar questions from civilian institution contracting-related graduates?

Definitions

The purpose of this section is to clarify, for the reader, potentially unfamiliar words, symbols, and phrases found within the text of this research study.

1. Acquisition - the process consisting of planning, designing, producing, and distributing a weapon system/equipment (12:11).

2. AFIT CAM Graduate - Air Force officers who have successfully completed a graduate degree in Logistics Management with an emphasis in the contracting/procurement/manufacturing area. This person graduated from the AFIT in-residence program from 1974 to 1983 (17:3).

3. Contracting Officer - A person with the authority to enter into, administer, or terminate contracts and make related determinations and findings (12:167).

4. Contracting-related graduate program - A contracting-related program of study leading to a masters degree from either Webster University, F.I.T., or Western New England College.

5. Contractor - An entity in private industry which enters into contracts with the government (12:167).

6. Procurement - Purchasing, renting, leasing, or otherwise obtaining supplies or services (12:542).

7. Usefulness - something that can be used to advantage; something serviceable, helpful, beneficial; often, having practical utility (12:651).

8. 1AMH/P - the Advanced Academic Degree code associated with a masters degree in a contracting/procurement-related area of study (28:89).

9. 65XX - the Air Force Specialty Code (AFSC) associated with a contracting/production/manufacturing officer in the Air Force (29:113).

Chapter I introduced the subject of this research effort. The chapter also stated the problem and the objectives of the study. Each of the four institutions in this study were examined, the relevant literature was reviewed, and research questions and key definitions were given. The next chapter outlines the methodology used in this research effort.

II. Methodology

Overview

In Chapter I, the researcher defined the basic problem and formulated research questions. This chapter outlines the procedures used to answer the questions raised by this research effort. The researcher defines the graduate sample of interest, develops a survey questionnaire to gather the necessary data, and describes statistical tests and descriptive analyses to be performed based on the level of data gathered by this research. Finally, the assumptions and limitations of this research effort are presented.

Population

There are 145 active duty Air Force graduates of civilian institution contracting-related graduate programs (5). Although AFIT CAM graduates were not included in this researcher's survey, AFIT CAM graduates' responses to a previous survey were used to compare with this research effort. Seventy-seven AFIT CAM graduates completed a previous research questionnaire administered as part of the research study of Gillette and Wayne on the perceived utility of the AFIT CAM program. Four of the 145 civilian institution contracting-related graduate program graduates were in classified locations and could not be surveyed; therefore, the target population was 141 graduates (5).

Survey Instrument

General. After considering several data gathering techniques, the researcher determined that a mailed questionnaire would best satisfy the needs of this research effort. The advantages of a mailed questionnaire included relatively low cost, ease of preparation, and the ability to reach survey participants in a wide geographical area. In addition, the mailed survey allowed the respondents extra time to weigh alternatives and make responses that most accurately reflected their personal views (13:307).

Although the mailed questionnaire was the only practical instrument to use in this study, its disadvantages are significant and need to be addressed. Emory identified two major disadvantages of the mailed questionnaire. Its principle disadvantage is that it is usually subject to a strong bias of nonresponse thereby giving the researchers little control over the response rate (13:308). The second major disadvantage of the mailed questionnaire is that it is usually limited as to the amount and type of information which can be gathered. The reason for this limitation is that respondents tend to cooperate less as the length of the questionnaire increases. According to Emory, a general rule of thumb is that the subject should be able to respond in ten minutes or less (13:308).

Since the length of the survey instrument to be used in the conduct of this research was to be relatively short,

the mailed questionnaire's limited ability to gather data was minimized. The forty-nine questions (eight fill-in, 39 multiple choice, and two open-ended questions; See Appendix) included in the survey instrument obtained all the necessary data to fulfill survey objectives.

In addressing the problem of nonresponse bias as it applied to this research effort, the concept of anonymity needed to be addressed. A basic premise of this study was the guarantee of survey participants' anonymity. The purpose of anonymity was to relieve the survey participants' concern that candid and honest answers would affect their professional careers (9:15). Because of the anonymity, the researcher was unable to determine the identities of survey non-respondents. This made follow-up mailing of duplicate questionnaires to non-respondents impossible. A concerted effort was made to stimulate responses through careful design and execution of the survey instrument (13:310).

Questionnaire Structure. A questionnaire to measure AFIT CAM graduates' perceptions was accomplished by Gillette and Wayne in a previous AFIT thesis, A Measurement of AFIT Contracting and Acquisition Management Program Usefulness as Perceived by Graduates and Their Supervisors (17:7).

Although their research questionnaire was somewhat different from this researcher's questionnaire, perceived utility by graduates of contracting-related education was the key ingredient in both research efforts. The questionnaire to

measure perceived utility of graduates from civilian institution contracting-related graduate programs was divided into four sections: Demographics, Perceptions, Course Usefulness, and Open-Ended Questions (See Appendix).

In the Demographic section of the survey instrument, questions gathered descriptive information including educational background, rank, command, AFSC, assignments, and contracting experience. The information in this section answered Research Question One which examined the demographic profile of the graduates.

The second section, Perceptions, dealt with attitudinal perceptions of civilian institution contracting-related graduate program graduates regarding the usefulness of their contracting-related graduate program. Questions within the Perception section of the questionnaire were categorized as follows:

1. Usefulness of the civilian institution contracting-related graduate program as perceived by graduates(See Appendix, Questions 23-27). These specific questions were used in answering Research Question Two, which focused on the perceived utility of the respondents' education in postgraduate assignments, and Research Question Four, which compared the graduates of civilian institutions to graduates from the AFIT CAM program.

2. The applicability of the civilian institution contracting-related curriculum to duties performed by

graduates in follow-on assignments(See Appendix, Questions 12-22). These specific questions were used in answering Research Question Two.

The third section of the survey, Course Usefulness, measured attitudinal perceptions of civilian institution contracting-related graduate program graduates regarding the usefulness of subject matter areas in follow-on assignments. Questions within the Course Usefulness section were synthesized from Webster University, F.I.T., and Western New England College catalogs since the entire population surveyed received their advance contracting-related degree from one of these three schools. The questions in this section(See Appendix, Questions 28-47) were used in answering Research Question Three, which detailed the most/least useful subject areas as perceived by respondents, and Research Question Four.

The fourth and final section of the survey instrument contained two open-ended questions concerning whether there should be more or less emphasis of certain subject areas in their civilian institution contracting-related graduate programs based on their follow-on field experience. These open-ended questions allowed participants the freedom of expression not found in the highly structured, multiple choice questions. These open-ended questions were informally analyzed by the author with the intent of determining certainty of feelings and expressions of

intensity (13:234). These questions were used to help answer Research Question Three.

The Measurement Scale. In order to provide a measure of the desired information needed to answer all of the research questions, a measurement scale had to be used. The seven-point Likert scale was chosen for the Perception section because it provided the best measure of the desired information, and because it is flexible, reliable, and provides a large volume of data (13:273). Additionally, the Likert scale can be easily and quickly constructed. The scale, adapted for the Perception section, consisted of seven possible responses including: (1) Strongly Disagree, (2) Disagree, (3) Slightly Disagree, (4) Undecided/Don't Know, (5) Slightly Agree, (6) Agree, (7) Strongly Agree. The measurement system was complete when this scale was paired with a statement to which the respondent was asked to indicate his or her level of agreement (9.19).

The second scale used in this questionnaire was used in the Course Usefulness section of the questionnaire. The five-point scale is an adaptation of a similar scale used in a previous AFIT thesis, An Evaluation of the Requirements for Qualification and Warranting of Administrative Contracting Officers (14:48). This scale was most appropriate for rating the numerous courses because it was easy to read and, thus, could be answered quickly and easily. It also gave the researcher all of the information needed to adequately measure perceived subject area utility.

Distribution. The AFIT Personnel System Management Division (AFIT/DPW) provided a computer-generated listing of those active duty Air Force officers who have graduated from a civilian institution contracting-related graduate program. The total officers that fit these criteria was 145. With the exception of the four officers in classified locations, 141 graduates were sent survey packages, including questionnaires and pre-addressed return envelopes. Questionnaires were mailed on 13 June 1985 with a respondent completion deadline of 1 July 1985. To insure anonymity, a second mailing was not attempted.

Statistical Test. There were two statistical tests used in this research effort. They were the Chi-Square test for independence and contingency table analysis (10). Both were used on Research Question Four which compared the responses of AFIT CAM graduates to civilian institution contracting-related graduate program graduates. Contingency table analysis was used to examine the relationship, if any existed, between the responses of the two groups of graduates. This technique utilizes the Chi-Square test for independence to determine the statistical significance of the relationship between the responses by the two separate groups of graduates (22:203).

The first three research questions are answered from data that is best analyzed in tabular form; therefore, the information gathered from the responses will be

categorically grouped and placed in tables. Demographics, subject matter usefulness, and perceptions can be shown quite easily in tabular form.

Assumptions and Limitations. The assumptions are:

- 1.) Survey respondents took the time to adequately consider each response, and then answered honestly.
- 2.) Nonresponse of some of the target population did not affect the conclusions of the research effort.
- 3.) The survey questionnaire is a valid and reliable attitude measurement tool. It is valid because it measures what it is supposed to measure and is reliable because it provides consistent results.
- 4.) The researcher's definition of "usefulness" was appropriate for this research study.
- 5.) The civilian institution contracting-related graduate programs have not significantly changed over time.

The limitations are:

- 1.) Conclusions applied only to the respondent population. No statistical inferences were attempted concerning the overall population (7:23).
- 2.) Measurement of perceptions and attitudes was qualitative in nature and only limited accuracy can be achieved in the measurement of attitudes (17:63).
- 3.) Responses to the open-ended questions were interpreted and analyzed by the researcher and conclusions were based on the researcher's subjective judgment.

This chapter explained the research methodology used in this study. The population, survey questionnaire, measurement scale, distribution plan, statistical tests used, and the various assumptions and limitations of this research effort were also presented. The next chapter analyzes the data gathered from the survey responses.

III. Data Analysis

Introduction

The purpose of this chapter is to present and analyze survey data using the research methodology formulated in Chapter II. Included in this chapter are three major sections: Survey Response Summary, Civilian Institution Contracting-Related Graduate Questionnaire Analysis (all four sections), and Comparison of AFIT CAM graduates (from Gillette and Wayne's AFIT thesis) to civilian institution contracting-related graduates.

Survey Response Summary

A total of 141 graduate survey questionnaires were mailed and 71 graduates responded (50.3%). Respondents' years of graduation from their contracting-related masters programs ranged from 1972 to 1984. Over half of the respondents graduated in the last five years. The largest number of graduates obtained their degree in 1982 (23.9%); whereas, 1972 only had one graduate respondent. Table 3.1 summarizes the survey response percentages by graduation year.

Parts I, II, and III of the 71 returned questionnaires (i.e., the Demographics, Perceptions, and Course Usefulness sections) were completed by all respondents in their entirety. Only 76 percent completed Part IV, Open-Ended Questions.

Table 3.1

Response Percentage by Graduation Year

Graduation Year	Total Response	% Total Response
1972	1	1.4
1977	2	2.8
1978	11	15.5
1979	6	8.5
1980	7	9.9
1981	12	16.9
1982	17	23.9
1983	12	16.9
1984	3	4.2
Total	71	100.0

Of the three civilian institutions, F.I.T. had the highest percentage survey return rate, 50 percent. Webster University graduates had a return rate of 46 percent and Western New England College had a survey return rate of 43 percent.

Questionnaire Analysis

This section analyzes each of the four parts of the questionnaire. Each of the four parts looks at two distinct groups of civilian institution respondents. One group of respondents is the entire collection of the 71 respondents. The second group is a sub-group of the first group. This second group is composed of respondents with a current 65XX AFSC and/or a secondary/tertiary 65XX AFSC. Eighteen out of the 71 respondents fell into the latter group. The reason for separating the survey response group into the smaller group of individuals with 65XX AFSCs was to make the data analysis more meaningful. Since about 75 percent (54) of the respondents had no current or secondary/tertiary 65XX AFSC, their comparison to AFIT CAM graduates may not prove to be as insightful into the usefulness of the civilian institution graduate programs as would a comparison of the civilian institution graduates with a 65XX AFSC to AFIT CAM graduates (all of which had 65XX AFSCs). When the text of this research study mentions "graduates with a 65XX AFSC", it refers to the graduates of a civilian institution contracting-related graduate program that hold a current

65XX AFSC and/or a secondary/tertiary 65XX AFSC. This section begins with an analysis of the demographics of the respondents.

Part I--Demographics.

This section analyzes the demographics of the civilian institution contracting-related graduate program graduates through examination of Part I of the survey instrument.

Research Question One: What is the demographic profile of active duty Air Force civilian institution contracting-related graduate program graduates?

Question 1 on the survey instrument asked from which school the respondents graduated. Since 128 (90.8 percent) of all graduates surveyed graduated from Webster University, the researcher expected a preponderance of returns from Webster University graduates. This is what occurred as 91.5 percent of the returns were from Webster University graduates. Of those graduates with 65XX AFSCs, 17 out of the 18 graduated from Webster University. The other individual with a 65XX AFSC was a graduate of F.I.T. Table 3.2 shows the results from Question 1.

Table 3.3 lists how the respondents received their graduate degree. A majority (95.8 percent) of all civilian institution contracting-related degrees were obtained through off-duty programs. Of the two respondents that indicated "Other", one obtained the degree from an Air Force Bootstrap program and the other individual did not specify

Table 3.2

Response Percentage by Graduate School

School	Total Response	% Total Response	65XX Graduates	% Total 65XX Graduates
Webster University	65	91.5	17	94.4
Western New England College	3	4.25	0	0.0
F.I.T	3	4.25	1	5.6
Total	71	100.0	18	100.0

Table 3.3

Response Percentage by Method Degree Obtained

Method	Total Response	% Total Response	65XX Graduates	% Total 65XX Graduates
Off-duty	68	95.8	16	88.8
AFIT Sponsorship	1	1.4	0	0.0
Other	2	2.8	2	11.2
Total	71	100.0	18	100.0

how the degree was obtained. Both of these individuals were holders of a 65XX AFSC.

The number of captains and majors responding to the survey was identical. Table 3.4 shows that 25 captains and 25 majors responded. Almost as many lieutenant colonels (19) responded as did captains and majors. Of the respondents with a 65XX AFSC, half were captains.

Question 5 asked respondents to identify their present command. The researcher gathered a wide variety of responses to this question. Table 3.5 shows the various respondents' commands. The command with the highest representation among respondents is Air Force Systems Command with 15 out of 71 respondents, or 21.2 percent. Of the 18 respondents with 65XX AFSCs, eight (44.4 %) were presently serving in Air Force Systems Command.

The current and secondary/tertiary Air Force Specialty Codes (AFSC) were even more dispersed than the present commands. For ease of use, the AFSCs were divided into two distinct categories. Table 3.6 shows current AFSCs separated by 65XX and non-65XX AFSCs. The 65XX is further severed into specific 65XX AFSCs. This table shows that only 22.5 percent of all respondents have a current 65XX AFSC. Table 3.7 shows secondary/tertiary AFSCs separated by 65XX or non-65XX AFSC. Again, the 65XX AFSC category is further broken down into specific 65XX AFSCs. Table 3.7 reflects only 11.2 percent (8) of the survey participants

Table 3.4

Respondents by Rank

Rank	Total Response	% Total Response	65XX Graduates	% Total 65XX Graduates
Capt	25	35.2	9	50.0
Maj	25	35.2	5	27.7
Lt Col	19	26.8	4	23.3
Col	2	2.8	0	0.0
Total	71	100.0	18	100.0

Table 3.5

Respondents by Present Command

Present Command	Total Response	% Total Response	65XX AFSC Graduates	% Total 65XX Graduates
SYSTEMS COMMAND	15	21.2	8	44.4
SPACE COMMAND	8	11.4	0	0.0
TAC	7	9.9	0	0.0
HQ/USAF	5	7.0	1	5.6
MAC	5	7.0	2	11.1
ATC	5	7.0	1	5.6
AFLC	4	5.6	2	11.1
DLA	3	4.2	2	11.1
PACAF	3	4.2	0	0.0
USAFE	3	4.2	2	11.1
SAC	2	2.8	0	0.0
USAF ACADEMY	2	2.8	0	0.0
AFCC	2	2.8	0	0.0
All Others (1 each)	7	9.9	0	0.0
Total	71	100.0	18	100.0

Table 3.6
Respondents by Current AFSC

AFSC	Total Response	% Total Response
65XX	16	22.5
6516	(8)	(11.3)
6524	(1)	(1.4)
6531	(1)	(1.4)
6534	(5)	(7.0)
6591	(1)	(1.4)
Non-65XX	55	77.5
Total	71	100.0

Table 3.7

Respondents by Secondary/Tertiary 65XX AFSC

AFSC	Total Response	% Total Response
65XX	8	11.2
6516	(1)	(1.4)
6524	(3)	(4.2)
6534	(4)	(5.6)
N/A	63	88.8
Total	71	100.0

currently possess a secondary/tertiary 65XX AFSC. Of those, only two have a secondary/tertiary 65XX AFSC and no current 65XX AFSC. The remaining six individuals also have a current 65XX AFSC. It is from these statistics that the researcher was able to identify those respondents in competition with AFIT CAM graduates for the IAMH/P billets.

Question 9 and 10 results were somewhat related as can be seen in Tables 3.8 and 3.9. The former question concerned the number of contracting-related duty assignments held since graduation. Out of the 71 graduates surveyed, 38 respondents (53.5 percent) have never held a contracting-related position. Only 18 (25.3 percent) have held two or more contracting-related positions since graduation from their civilian institutions. Only 10 of the 18 individuals with a 65XX AFSC have been in more than one contracting-related assignment since graduation. The latter question concerned the type of contracting the respondents have been involved in since graduation. Of the 71 respondents, 37 (52.1 percent) indicated no involvement in any type of contracting since graduation. Of those 18 respondents with a 65XX AFSC, 10 had some systems-level experience. Only one out of the 18 individuals had no contracting-related experience. It is unknown how that individual received a 6534 AFSC with no experience. From the responses to Questions 9 and 10, it can be seen that the majority of respondents have never held contracting-related jobs nor have they been involved in any type of contracting-related

Table 3.8

Respondents by Number of Contracting-Related
Jobs Held Since Graduation

Number	Total Responses	% Total Responses	65XX Graduates	% Total 65XX Graduates
0	38	53.5	1	5.6
1	15	21.2	7	38.8
2	10	14.1	3	16.7
3	3	4.2	4	22.2
4	4	5.6	2	11.1
5	0	0.0	0	0.0
6	1	1.4	1	5.6
Total	71	100.0	18	100.0

Table 3.9

Respondents Involvement in Contracting by Type

Type	Total Response	% Total Response	65XX Graduates	% Total 65XX Graduate
Base (A)	2	2.8	2	11.1
Central (B)	3	4.2	3	16.7
Systems (C)	17	24.0	5	27.8
A, B, and C	1	1.4	0	0.0
Not A, B, or C	37	52.2	1	5.6
A and C	5	7.0	3	16.7
A and B	3	4.2	1	5.6
B and C	3	4.2	3	16.7
Total	71	100.0	18	100.0

work. Although some respondents have been involved with contracting, about half of those did not possess a 65XX AFSC.

The last area for demographic study in this questionnaire was the issue of a thesis requirement in the respondents' contracting-related graduate program. Of the total respondents, only five theses were accomplished (7 percent). Of those five, four were mandatory and one was optional. All were completed for Webster University. With no past data on Webster University available, the researcher can only speculate that the thesis requirement has changed over time from a mandatory to an optional requirement. Table 3.10 shows the breakdown of responses on the thesis requirement issue.

The demographic profile of the civilian institution contracting-related graduate program graduates is as follows:

The average graduate is a major that attended Webster University during off-duty time and graduated in 1982 without doing a thesis. The average graduate is not presently serving in a 65XX AFSC position and has little or no contracting-related experience.

Part II, Perceptions, will be analyzed in the next section of this research study.

Part II--Perceptions. This section consists of an analysis of responses to survey questions from Part II of

Table 3.10

Respondents' Thesis Requirements

Option	Total Response	% Total Response	65XX Graduates	% Total 65XX Graduates
Mandatory	4	5.6	1	5.6
Optional	14	19.7	3	16.7
Did One	(2)	(2.8)	(2)	
Did Not Do One	(12)	(16.9)	(1)	
Not a Thesis Program	53	74.7	14	77.7
Total	71	100.0	18	100.0

the survey questionnaire. Part II attempted to answer Research Question Two.

Research Question Two: What are the perceptions of active duty Air Force civilian institution contracting-related graduate program graduates regarding the usefulness of their graduate program in postgraduate assignments?

Questions 12 through 27 on the survey instrument dealt with graduates' perceptions of the utility of graduate courses from their contracting-related graduate program in postgraduate assignments and the perceived utility of their graduate programs. The questions were constructed such that the basic content of one of the courses in their graduate program was linked to the respondents job. For example, Question 12 stated: "My job requires the ability to understand the functions of the contracting manager." Respondents identified one of the seven alternatives offered in the Likert scale described previously which best represented the utility of the particular course content (in the example: Functions of the Contracting Manager) to their most recent 65XX job. If a respondent never had a 65XX position, they were asked to answer the questions with regard to their current job. Questions 12 through 22 dealt with the perceived utility of specific graduate subject areas in postgraduate assignments; whereas, Questions 23 through 27 dealt with overall program usefulness perceptions. Questions 12 through 22 were constructed

around the curriculum of Webster University; however, F.I.T. and Western New England College curricula were taken into consideration during question construction. The reason Webster University was the model curriculum for question structure was because 90.8 percent of the population surveyed obtained their contracting-related graduate degree from Webster University. The researcher felt questionnaire structure geared towards Webster University would be the most accurate measure of the perception issue.

The questions in this section were ranked in the following manner: First, a rating scale was subjectively decided. As a result of the subjectivity, median responses (selections 3, 4 or 5) will be inconclusive. (See Table 3.11) Next, a tally of each response was recorded. "Strongly Disagree" responses were given a rating of "1", "Disagree" responses garnered a "2", etc. The total number for each response was multiplied by that rating scale and the grand total was divided by 71 (the total responses). That number was the usefulness perception rating for that question. Table 3.12 shows the rating for each question in Part II.

Question 12 concerned the graduates' need to understand the functions of the contracting manager. (Courses in the civilian institution contracting-related graduate program which correspond to the question are contained in parentheses. For example, for Question 12,

Table 3.11

Rating Scale for Part II Questions

Response	Ratings points per Response
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Undecided/Don't Know	4
Slightly Agree	5
Agree	6
Strongly Agree	7

Table 3.12

Ratings for Part II Questions

Question Number	Median Total Score	Rating for Total Responses	Median 65XX Score	Rating for 65XX Graduates
12	5	4.7	7	6.0
13	5	4.4	7	5.5
14	2	3.4	5	4.6
15	3	3.7	7	6.0
16	4	4.0	7	6.5
17	3	3.8	7	6.3
18	2	3.6	7	6.2
19	2	3.1	5	4.1
20	6	6.0	7	6.6
21	6	6.1	7	6.7
22	6	5.4	6	5.7
23	6	5.5	6	5.6
24	5	4.9	6	4.8
25	5	4.9	6	5.3
26	6	5.6	7	6.3
27	6	5.6	7	6.1

Procurement and Materials Management covers the subject area implied in the question.) The rating for this question was 4.7, indicating the perceptions tended toward slight agreement with the question. The rating for Question 12 for the 18 individuals with a 65XX AFSC was 6.0, indicating definite agreement with the question. Of the 18 respondents, 11 answered "Strongly Agree" on this question.

Question 13 requested the graduates' indicate the degree to which their jobs require a working knowledge of the legal framework for contracting in the public sector (Procurement Contract Law). The respondents did not agree as much with this question as they did with the Question 12. Question 13 only averaged 4.4 on the rating scale for the entire group, and 5.5 for the graduates with a 65XX AFSC.

Question 14 asks each graduate if their job requires an understanding of effective methods and selection of production alternatives (Operations Management and Quality Assurance). This question amassed the second lowest average rating for the entire group of 71 respondents, a 3.4. It was also the second lowest average rating for those officers with a 65XX AFSC, a 4.6.

Questions 15 and 16 solicited opinions on the use of pricing and negotiations in the graduates' jobs (Pricing and Negotiations). These questions garnered ratings of 3.7 and 4.0, respectively for the group of 71 respondents. These ratings are deceiving since the vast majority of respondents

answered either "Strongly Disagree/Disagree" or "Agree/Strongly Agree". These response extremes directly correlated to the respondents jobs. If the jobs were contracting-related, these respondents always selected either "Agree" or "Strongly Agree" to these two questions, and if the respondent did not have a contracting-related job, the results were just the opposite. The ratings were 6.0 and 6.5, respectively, for the graduates with a 65XX AFSC.

The next three questions (17,18,19) drew ratings of less than four for the entire group, indicating areas of concern in each of these questions which were not viewed as important as most of the other questions. For the group of 71 respondents, Question 17 (Issues in Procurement) has a 3.8 rating, Question 18 (Government Procurement Law) has a 3.6 rating, and Question 19 (Research Methods) drew the lowest rating average of all the questions in this section, a 3.1. The officers with a 65XX AFSC rated the three areas much higher than the entire group rated the areas. Question 17, 18, and 19 yielded ratings of 6.3, 6.2, and 4.1 respectively. This suggests that the civilian institution graduates are in jobs that do not require knowledge of research methods.

The next two questions, 20 and 21, were, by far, perceived to be the most important in the minds of the respondents. Question 20 concerned oral communication (6.0

rating), and Question 21 concerned written communication (6.1 rating). These questions were included in the survey instrument to determine if the courses in the civilian institutions met the respondents' communicative skills needs in postgraduate assignments. None of the three graduate program curricula contained specific courses in oral and/or written communication; however, respondents found it a "critical" part of their postgraduate jobs. The respondents with a 65XX AFSC also rated these two areas among the highest of all areas rated.

Question 22 asked graduates if their civilian institution contracting-related graduate degree adequately prepared them to understand the procurement of major systems (Systems Procurement and Project Management). This question averaged 5.4 on the rating scale which was between "Slightly Agree" and "Agree".

Questions 12 through 22 dealt with the perceived utility of graduate course subject areas in postgraduate assignments. Graduates felt communicative skills were extremely important in postgraduate assignments, but felt the necessity to be adept at research in their jobs was minimal. Those officers with a 65XX AFSC rated the contracting-specific courses much higher than did the rest of the response group.

The last questions in Part II, 23 through 27, tried to capture the graduates' overall perceptions of their graduate

degree usefulness. All of the questions were rated almost equally. There was only about a one-half rating point spread between the lowest rated questions (Questions 24 and 25 were rated 4.9) and the highest rated questions (Questions 26 and 27 were rated 5.6). Question 23 received an average rating of 5.4. This means the average graduate feels better able to solve on-the-job problems because of the contracting-related education they received. Also, the graduates feel the degree will be of more value in the future than it has been in their present assignments. They perceive the value of the degree increasing over time and think the degree is useful to the Air Force. Lastly, the average graduate encourages other officers to attend the program they attended.

To answer Research Question Two on the graduates' perceived utility of their contracting-related education, the researcher looked at Part II as two separate sections for analysis. First, Questions 12 through 22 dealt with the perceived utility of graduate course subject areas in postgraduate assignments. Here, responses to the questions proved inconclusive for the respondent group as a whole. The average for the group hovered in the 3,4, and 5 range which indicated no strong feelings toward "Agree" or "Disagree". The respondents with 65XX AFSCs felt quite differently from the entire group. These 65XX respondents felt the course subject areas mentioned were/are required in

their jobs. Their average rating on Questions 12 through 22 was "6.0" which was "Agree". Both groups felt a need to be proficient in oral and written communication. Questions 23 through 27 solicited views of the graduates on overall utility of their graduate programs. As a group, they felt the programs were useful and would recommend other officers to attend their alma mater. The individuals with a 65XX AFSC had a higher average rating on every question, with the exception of the question on whether their degree will be of more value in the future than it is presently. This discrepancy may be because the respondents with 65XX AFSCs are currently using their degree; whereas, the other respondents are not using their graduate degrees.

This section examined the perceived utility of the graduates' contracting-related education. Part III, Course Usefulness explores the issue of specific course usefulness in postgraduate assignments.

Part III--Course Usefulness. The previous section analyzed the graduates' perceived utility of graduate course subject areas. This section analyzes the responses to the survey section on specific course usefulness in postgraduate assignments.

Research Question Three: What are the most/least useful subject areas in the civilian institution contracting-related curricula as perceived by active duty Air Force graduates?

The various courses listed in this section for the graduates to assess were courses from Webster University, F.I.T., and Western New England College. As in the previous section, the courses are weighted heavily towards Webster University for the same reasons given in the previous section. The rating scale used to rank courses in this section is similar to the rating scale used in the analysis of the Part II data. Table 3.13 shows the rating scale and Table 3.14 shows the courses ranked from most useful to least useful. Table 3.14 ranked courses by computing the average rating for the group. The highest average rating was ranked first, the second highest rating was ranked second, etc.

As can be seen in Table 3.14, the general management courses were rated among the most useful courses in the civilian institution curricula by the entire group of respondents. Management Theory was rated the most useful of all the courses listed. Right behind the general management courses were the contracting-related courses. Among the least useful of all courses were the quantitative-type courses (Statistics and Operations Management) as well as Financial Accounting, Marketing, and Economics.

For those graduates with a 65XX AFSC, the results of this section proved quite different from the group as a whole. Contract Law, Contract Negotiations, Pricing, Procurement Management, Incentive Contracts, and Systems

Table 3.13

Rating Scale for Course Usefulness

Response	Points
A. I have not had material in the subject matter area	1
B. I have had the material but found it of little use	2
C. I have had the material and use it some	3
D. I have had the material and use it extensively .	4
E. I have had the material and feel it is mandatory for my job	5

Table 3.14
Course Rating

Course	All Respondents			Graduates with 65XX AFSC		
	Median	Rating	Rank	Median	Rating	Rank
Management Theory	4	3.52	1	4	3.72	7
Organization Behavior	4	3.47	2	4	3.61	9
Contract Law	3	3.46	3	5	4.44	1
Procurement Management	3	3.30	4	4	4.28	4
Systems Procurement/ Project Management	3	3.11	5	4	3.89	6
Contract Negotiations	3	3.05	6	5	4.39	2
Case Studies in Procure- ment Contracting	3	2.94	7	4	3.67	8
Incentive Contracts	2	2.87	8	4	4.17	5
Production Operations Management and Qual- ity Assurance	3	2.76	9	3	3.11	11
Pricing	2	2.73	10	4	4.39	2
Information Systems	3	2.66	11	3	2.61	15
Current Issues in Procure- ment Management and Material Management	2	2.54	12	3	3.33	10
Material Management	2	2.50	13	3	3.11	11
Statistics	3	2.47	14	3	2.89	13
Operations Research	2	2.26	15	3	2.39	19
Financial Accounting	2	2.25	16	3	2.61	15
Marketing	2	2.25	16	3	2.89	13
Managerial Accounting	2	2.19	18	3	2.44	18
Microeconomics	2	1.95	19	3	2.39	19
Economic Foundations	2	1.83	20	3	2.56	17

Procurement/Project Management were the top six courses listed in the order ranked. The general management courses followed these contracting-specific courses in order of importance in postgraduate assignments. Like their parent group, the 65XX respondents perceived the economic, quantitative, and accounting courses as least useful.

In Part III, the Course Usefulness section, it was shown the average graduate felt the general management courses were the most useful in postgraduate assignments. The graduates with a 65XX AFSC thought the contracting-specific courses were the most useful in their jobs. The quantitative, accounting, and economic courses were perceived to be least useful in postgraduate assignments.

Part IV presents questions which give graduates a chance to expound upon their perceptions, as opposed to simply choosing an answer from a list of available choices.

Part IV--Open-ended Questions. Part IV contained questions which afforded respondents an opportunity to identify those subject areas which warranted increased emphasis in civilian institutions. Graduates were also asked to list topics or subject areas which warranted decreased emphasis in the civilian institution curricula. Questions 48 and 49 for graduates (See Appendix) were the open-ended questions.

In Tables 3.15 and 3.16, subject areas are listed alphabetically. No attempt was made to determine relative

importance or ranking among topics. Table 3.15 displays topics or subject areas needing increased emphasis in the civilian institution contracting-related curricula as suggested by graduates. These topics are categorized into two broad groups: contracting and non-contracting related subjects. The subject areas with an asterisk beside them are the areas most often mentioned by graduates with a 65XX AFSC.

Webster University, at present, does not offer courses in the following areas singled out by graduates as needing increased emphasis: Production, Cost and Schedule Analysis, Management Information Systems, Incentive Contracting, and Planning, Programming, and Budgeting System. F.I.T. does not offer courses to cover the following areas which need more emphasis: Project Management, Quality Assurance, Materials Management, Case Studies in Procurement, Requests for Proposal, Overview of Government Procurement. Western New England College offers a number of courses which graduates say need more emphasis; however, this college's curriculum is weak in Project Management, Systems Procurement, Quality Assurance, Production Operations, Contract Law, Procurement Management, Materials Management, Case Studies in Procurement, and Incentive Contracting.

There are numerous areas which the graduates felt could be de-emphasized (See Table 3.16). All three civilian institutions could, according to the survey responses, place

Table 3.15

Civilian Institution Subject Areas Needing
Increased Emphasis

Contracting-Related	Non-Contracting Related
Case Studies in Procurement	Communication Skills
*Contract Administration	a. Writing
*Contract Law	b. Speaking
Cost and Schedule Analysis	Finance
Incentive Contracting	Financial Accounting
Material Management	Managerial Accounting
Management Information Systems	Organizational Behavior
*Negotiations	Operations Research
Overview of Government Procurement	
Planning, Programming, and Budgeting System (PPBS)	
*Pricing	
Procurement Management	
Production Operations	
Project Management	
*Quality Assurance	
*Request for Proposal Construction	
Systems Procurement	

* Most often mentioned by graduates with a 65XX AFSC

Table 3.16

Civilian Institution Subject Areas Needing Less Emphasis

Contracting-Related

Case Studies in Procurement
 *Contract Law
 Current Issues in Procurement and Materiels Management

Non-Contracting Related

Accounting
 Economic Foundations
 Information Systems
 Legal Issues in Management
 *Marketing
 Materiels Management
 Microeconomics
 *Operations Research
 *Organization Behavior
 Personnel Management
 Production Management
 Quality Assurance
 *Statistics

*Most often mentioned by graduates with a 65XX AFSC

less emphasis on marketing, accounting, microeconomics, statistics, operations research, economic foundations, information systems, personnel management, and legal issues in management.

The graduates' views were quite diverse on which subject areas should receive more emphasis and which subject areas should receive less emphasis in their graduate programs. It should be pointed out that the respondents who have held a contracting-related position since graduation felt the contracting-related courses should receive more emphasis in their graduate programs; whereas, the individuals with no postgraduate contracting-related experience thought the general management courses should be stressed more heavily in the graduate programs. Now, a comparison to AFIT CAM graduates will be made.

Comparison to AFIT CAM Graduates. In this section, the researcher will show how AFIT CAM graduates compare to civilian institution contracting-related graduate program graduates on the issue of overall perceived utility of their graduate programs. The civilian institution graduates are divided into two groups for meaningful comparison. One group is composed of graduates with no current or secondary/tertiary 65XX AFSC, The other group contains graduates with a current and/or secondary/tertiary 65XX AFSC. Eighteen out of the 71 respondents fit into the latter group.

Research Question Four: How do the responses to the questions on overall perceived utility of graduate programs from AFIT CAM graduates compare with responses to similar questions from civilian institution contracting-related graduates?

The questions used to compare perceived utility of the AFIT CAM program to similar programs in civilian institutions were questions 23 through 27. These questions are identical to questions 26, 27, 30, 65, and 66 from the graduate questionnaire used by Wayne and Gillette in their research study.

Question 26 in the current research's questionnaire asked if the graduates would encourage other officers to attend their contracting-related graduate program. The responses to this question were compared with responses to the AFIT CAM research questionnaire by using the following hypotheses:

HO: There is no significant difference in proportion of AFIT CAM respondents and civilian institution respondents that would encourage other officers to attend the contracting-related graduate program they attended.

HA: There is a significant difference in proportion of AFIT CAM respondents and civilian institution respondents that would encourage other officers to attend the contracting-related graduate program they attended.

The test statistic was the Chi-Square table value of 5.991. This was computed using two degrees of freedom, which means two variables, and an alpha of .05, which is the 95% confidence level (22:341). The decision rule was to reject the null hypothesis (H₀) if the calculated Chi-Square value was greater than 5.991. For Question 26, the calculated Chi-Square value was 3.96 (See Table 3.17); therefore, the researcher could not reject the null hypothesis at the 95% confidence level. The researcher concluded that there was insufficient evidence to support a difference between the two groups of respondents on the issue presented in Question 26. Table 3.18 performs the same test on the civilian institution graduates with 65XX AFSCs. The calculated Chi-Square value was 3.169. Again, the researcher could not reject the null hypothesis at the 95% confidence level.

Question 27 asked the graduates to rank their perception of how useful their contracting-related degree is to the Air Force. The hypotheses associated with this question are:

H₀: There is no significant difference in the proportion of AFIT CAM graduates and the proportion of civilian institution graduates that feel their graduate contracting-related education is useful to the Air Force.

H_A: There is a significant difference in the proportion of

Table 3.17

Chi-Square for Question 26, Group 1

Question 26: I would encourage other officers to attend the contracting-related graduate program I attended.

	Disagree	Undecided Don't Know	Agree	Total
AFIT CAM Graduates	2	4	71	77
Civilian Graduates(all)	6	7	58	71

Observed(O)	Expected(E)	O-E	(O-E) 2	(O-E) 2/E
2	4.2	-2.2	4.84	1.15
6	3.8	2.2	4.84	1.27
4	5.7	-1.7	2.89	.51
7	5.3	1.7	2.89	.51
71	67.1	3.9	15.21	.23
58	61.9	-3.9	15.21	.25

$$X^2 = 3.96$$

$$3.96 < 5.991$$

Cannot Reject H0

Table 3.18

Chi-Square for Question 26, Group 2

Question 26: I would encourage other officers to attend the contracting-related graduate program I attended.

	Disagree	Undecided	Agree	Total
AFIT CAM Graduates	2	4	71	77
Civilian Graduates(65XX)	0	3	15	18

Observed(O)	Expected(E)	O-E	(O-E)2	(O-E)2/E
2	1.62	.38	.144	.089
0	.38	-.38	.144	.38
4	5.67	-1.67	2.79	.49
3	1.33	1.67	2.79	2.09
71	69.71	1.29	1.66	.02
15	16.29	1.29	1.66	.10

$$\chi^2 = 3.169$$

$$3.169 < 5.991$$

Cannot Reject H_0

AFIT CAM graduates and the proportion of civilian institution graduates that feel their graduate contracting-related education is useful to the Air Force.

The test statistic and decision rule did not change from Question 26. The calculated Chi-Square value was 11.91 (See Table 3.19), which is greater than 5.991, which means the null hypothesis is rejected at the 95% confidence level. The researcher concluded that there was sufficient evidence to support the fact that a difference exists between how useful the civilian institution graduates feel their degree is to the Air Force versus how useful the AFIT CAM graduates feel their degree is to the Air Force. The AFIT CAM graduates feel their degree is more useful to the Air Force than do the civilian institution graduates. The AFIT CAM graduates also feel their degree is more useful to the Air Force than do the civilian institution graduates with a 65XX AFSC. Table 3.20 shows the calculated Chi-Square value of 8.884, which means the null hypothesis is rejected at the 95% confidence level.

The last question which was analyzed and compared statistically to the AFIT CAM research questionnaire was Question 23. This question asked the graduates if they felt better equipped to solve on-the-job problems because of their graduate contracting-related education. The hypotheses associated with Question 23 follow:

Table 3.19

Chi-Square for Question 27, Group 1

Question 27: I feel that my graduate contracting-related degree is useful to the Air Force.

	Disagree	Undecided/ Don't Know	Agree	Total
AFIT CAM Graduates	0	1	76	77
Civilian Graduates(all)	9	3	59	71
Observed(O)	Expected(E)	O-E	(O-E) 2	(O-E) 2/E
0	4.68	-4.68	21.9	4.68
9	4.32	4.68	21.9	5.07
1	2.08	-1.08	1.17	.56
3	1.92	1.08	1.17	.61
76	70.24	5.76	33.18	.47
59	64.76	5.76	33.18	.51

$$\chi^2 = 11.91$$

$$11.91 > 5.991$$

Reject H_0

Table 3.20

Chi-Square for Question 27, Group 2

Question 27: I feel that my graduate contracting-related degree is useful to the Air Force.

	Disagree	Undecided/ Don't Know	Agree	Total
AFIT CAM Graduates	0	1	76	77
Civilian Graduates(65XX)	2	0	16	18
Observed(O)	Expected(E)	(O-E)	(O-E) 2	(O-E) 2/E
0	1.62	-1.62	2.62	1.62
2	.38	1.62	2.62	6.89
1	.81	.19	.036	.04
0	.19	-.19	.036	.19
76	74.57	1.43	2.045	.027
16	17.43	1.43	2.045	.117

$$X^2 = 8.884$$

$$8.884 > 5.991$$

Reject H_0

HO: There is no significant difference in proportion of AFIT CAM graduates' and civilian institution graduates' perceptions on how equipped they are to solve on-the-job problems because of their graduate contracting-related education.

HA: There is a significant difference in proportion of AFIT CAM graduates' and civilian institution graduates' perceptions on how equipped they are to solve on-the-job problems because of their graduate contracting-related education.

The test statistic and decision rule used to evaluate Question 23 data remained the same as those used for evaluating Question 26 and 27 data. The calculated Chi-Square statistic was .914 (See Table 3.21); therefore, the researcher could not reject the null hypothesis at the 95% confidence level. The researcher concluded there was insufficient evidence to support a difference between the two groups of respondents regarding perceived ability to solve on-the-job problems because of their graduate education. The same conclusion was drawn when the civilian institution graduates with 65XX AFSCs were compared with the AFIT CAM graduates. Table 3.22 shows that the null hypothesis cannot be rejected at the 95% confidence level.

Survey Questions 24 and 25 were used more informally, or non-statistically, to answer Research Question Four. Question 24 asked graduates whether their graduate

Table 3.21

Chi-Square for Question 23, Group 1

Question 23: I feel that I am better equipped to solve on-the-job problems because of my graduate contracting-related education.

	Disagree	Undecided/ Don't Know	Agree	Total
AFIT CAM Graduates	7	1	69	77
Civilian Graduates(all)	10	1	60	71

Observed(O)	Expected(E)	(O-E)	(O-E) 2	(O-E) 2/E
7	8.84	-1.84	3.39	.38
10	8.16	1.84	3.39	.42
1	1.04	.04	.0016	.002
1	.96	-.04	.0016	.002
69	67.1	1.9	3.61	.05
60	61.9	-1.9	3.61	.06

$$X^2 = .914$$

$$.914 < 5.991$$

Cannot Reject H0

Table 3.22

Chi-Square for Question 23, Group 2

Question 23: I feel that I am better equipped to solve on-the-job problems because of my graduate contracting-related education.

	Disagree	Undecided/ Don't Know	Agree	Total
AFIT CAM Graduates	7	1	69	77
Civilian Graduates(65XX)	3	0	15	18

Observed(O)	Expected(E)	(O-E)	(O-E)²	(O-E)²/E
7	8.11	-1.11	1.23	.15
3	1.89	1.11	1.23	.65
1	.81	.19	.04	.05
0	.19	-.19	.04	.21
69	68.09	.91	.83	.01
15	15.91	-.91	.83	.05

$$\chi^2 = 1.12$$

$$1.12 < 5.991$$

Cannot Reject H0

contracting-related education would be of more value in future assignments than in the current assignment. In responding to Question 25, graduate respondents considered whether or not their civilian institution contracting-related education had increased over time. Table 3.23 shows the results of Questions 24 and 25. This table uses the rating scale from Table 3.11 and categorizes respondents by graduation year.

For Question 24 the civilian institution graduates tended to "Slightly Agree" that their contracting-related education would be of more use in their future assignment than in their current assignment. Specifically, five of the eight classes agreed to some extent with Question 24. Year 1972 was not used because there was only one respondent in this class. The remaining three classes responded with a median score of four, or "Undecided/Don't Know". The median response was 4.8 and their rating score was 4.9. The civilian institution graduates with a 65XX AFSC had slightly higher results on Question 24 than did the total group of civilian institution graduates. These 65XX respondents had a median score of 6.0 and a rating score of 5.0. As reported in the Gillette/Wayne research, the combined median response of the AFIT CAM graduates to a question identical to this question was 4.4. Table 3.24 shows the comparison of the three groups on this question of whether their contracting-related education will be more

Table 3.23

Median Response by Class Year to Questions 24 and 25

Class	Median Response to Question		Rating Score for Question	
	24	25	24	25
1977	5.5	5.5	5.5	5.5
1978	4.0	6.0	4.7	5.2
1979	4.0	4.5	4.3	4.7
1980	5.0	5.0	5.0	4.9
1981	5.0	6.0	4.5	5.4
1982	5.0	5.0	5.1	4.7
1983	4.0	5.0	4.2	4.6
1984	6.0	6.0	6.0	6.0
Overall Score	4.8	5.4	4.9	5.1

Table 3.24

Median Response to Question 24,25 by Group

Group	Median Response to Question 24,25	
	24	25
All civilian institution graduates	4.8	5.4
65XX Respondents	6.0	6.0
AFIT CAM Respondents	4.4	5.0

useful in the future than it is at present.

In the analysis of Question 25, the researcher found that all eight classes agreed, to a certain degree, that the value of the degree would increase over time. The median response to Question 25 was 5.4, or between "Slightly Agree" and "Agree", and a rating score of 5.1. The group of civilian institution graduates with a 65XX AFSC had a combined median response of 6.0 and a rating score of 5.3. In comparison, the AFIT CAM graduate classes had one class with a median response of less than four, four classes with a median response of four, or "Undecided/Don't Know", and eight classes with some degree of agreement to a question identical to Question 25 (17:76).

As evidenced from Table 3.23, and from a similar table from the research study conducted by Gillette and Wayne, there was a slight trend detected in the responses which indicated a change in graduate perceptions of the civilian institution contracting-related program usefulness over time. From 1983 to 1984, the rating score went from about 4.0 to 6.0. This could suggest an optimism present in 1984 that was absent from the previous years' graduates. There were no significant changes to graduates' perceptions of the AFIT CAM program usefulness over time (17:76).

In summary, the AFIT CAM graduates feel their education is more useful to the Air Force than do the civilian institution graduates. There was not enough

evidence to support hypotheses that there were differences in perceptions between AFIT CAM graduates and civilian institution graduates on the issues of ability to solve on-the-job problems because of their education, and whether or not they would encourage other officers to attend the program they attended. The civilian institution graduates felt more strongly than AFIT CAM graduates that their degree will be of more value in future assignments than it has been in their current assignment. This perception of "future value" could stem from the fact that the majority of civilian institution graduates are in assignments unrelated to contracting and are looking forward to future assignments; whereas, almost all AFIT CAM graduates were in contracting-related assignments at the time they were surveyed.

When the group of civilian institution graduates with 65XX AFSCs are taken out of the total response group, the responses are quite different than those of the entire group of 71 respondents. These civilian institution graduates with 65XX AFSCs feel less strongly than the entire group on the issue of perceived future value of their graduate education. These graduates with 65XX experience feel their education is as useful to the Air Force as the AFIT CAM graduates feel their degree is to the Air Force.

Chapter IV will summarize this research study and make conclusions and recommendations from the research findings.

IV. Summary, Conclusions, and Recommendations

Introduction

The purpose of this final chapter is to present the results of the author's research effort. First, the research questions and methodology used in the study will be summarized. Second, the researcher will present several conclusions drawn from the project. Finally, recommendations relating to the civilian institution programs and recommendations for future follow-on research efforts are identified (16:104).

Summary

The methodology of analysis consisted of the construction of four basic research questions:

1. What is the demographic profile of active duty Air Force civilian institution contracting-related graduate program graduates?
2. What are the perceptions of active duty Air Force civilian institution contracting-related graduate program graduates regarding the usefulness of their graduate contracting-related education in postgraduate assignments?
3. What are the most/least useful subject areas in the civilian institution contracting-related curricula as perceived by active duty Air Force military graduates?
4. How do the responses to the questions on overall perceived utility of graduate programs from AFIT CAM

graduates compare with responses to similar questions from civilian institution contracting-related graduates?

In order to determine the answer to these questions, a survey questionnaire was developed and sent to graduates of civilian institution contracting-related masters programs. The questionnaire was mailed to a target population of 141 active duty Air Force civilian institution contracting-related graduate program graduates. Valid responses were obtained from 71 (50.3 percent) of the graduates.

The researcher analyzed the data in accordance with the methodology outlined in Chapter II. The key points of this methodology included:

1. Research Question One was answered by tabulating the responses to the questions in Part I of the survey instrument.
2. Research Question Two was answered by rating and tabulating the responses to the questions in Part II of the survey questionnaire.
3. Research Question Three was answered by rating the questions and tabulating the responses to the questions in Part III and Part IV of the research questionnaire.
4. Research Question Four was answered by using the Chi-Square statistical test to determine how the perceptions of the usefulness of the graduates' education differs between AFIT CAM graduates and civilian institution contracting-related graduate program graduates.

Each of the four research questions examined the responses of the civilian institution graduates as a whole, as well as the responses of the group of civilian institution graduates with a current and/or secondary/tertiary 65XX AFSC.

Conclusions

The final conclusions of this research effort are contained in four sections: Demographics, Perceptions, Course Usefulness, and Open-Ended Questions. Prior to accepting the conclusions of this research, the reader should review the assumptions and limitations listed in Chapter II. In addition, it should be noted that the research questions apply only to the respondent group of 71 graduates. Inferences to the overall population were neither attempted nor implied (17:107).

Demographics. A summary list of the researcher's conclusions related to the demographic profile of AFIT CAM graduate respondents are provided below.

1. The majority of respondents graduated from Webster University, one of the three civilian institutions from which contracting-related degrees were earned by survey respondents. Webster is the only institution (of the three) with branches on more than one Air Force base. All AFIT CAM respondents graduated from the AFIT in-residence program at Wright-Patterson Air Force Base.

2. The researcher concluded that a majority of the total graduate survey responses consisted of responses from graduates completing the civilian institution program within the last four years. This fact skewed the demographic results toward the more recent civilian institution graduates. A similar situation occurred with the AFIT CAM responses. Gillette and Wayne received the majority of the responses to their questionnaire from graduates which completed AFIT within the last three years (1979, 1980, and 1981).

3. All but three respondents obtained their civilian institution contracting-related masters degree during off-duty time. This fact, coupled with the fact that 53.5 percent of the respondents have never held a contracting-related position, could mean the graduate degree was a "square-filler" for these Air Force students.

4. The overwhelming majority of respondents do not hold a current 65XX AFSC, nor have they ever held a 65XX AFSC at any time in their career. All AFIT CAM respondents have at least one 65XX AFSC, with many possessing multiple 65XX AFSCs.

5. The preponderance of the survey respondent job titles were totally unrelated to contracting (e.g., Nurse, Physician Assistant, C-141 Pilot, Navigator, Weather Operations Officer, etc.). Seventy-nine percent of the AFIT CAM graduates currently fill contracting-related assignments (17:83).

6. A majority of civilian institution respondents are Air Force majors and lieutenant colonels; however, the respondents with 65XX AFSCs were mostly captains. The majority of AFIT CAM respondents were captains and majors.

7. Although Air Force Systems Command contained the largest number of respondents, there was no one dominant command. There were twenty commands represented by the 71 respondents, many with similar numbers of graduates assigned. Approximately 35 percent of the AFIT CAM graduates were assigned to Air Force Systems Command and 21 percent of civilian institution graduates were assigned to Air Force Systems Command. Of the civilian institution graduates with a 65XX AFSC, 39 percent were assigned to Air Force Systems Command.

8. Most civilian institution graduates have not been involved in any type of contracting (base, central, or systems level) since graduation. Of those individuals with some type of contracting involvement, the majority have been involved in systems level contracting. All AFIT CAM respondents have some contracting involvement, with most of that involvement at the systems level.

9. Only five respondents accomplished a thesis. Of those, only one had a choice whether to do one or not to do one. This tends to substantiate the lack of emphasis by civilian institution curriculum administrators of thesis research. All AFIT CAM respondents did a thesis, reflecting the importance AFIT places upon research ability.

Perceptions. Since the vast majority of survey respondents had very little, if any, contracting-related job experience, the questions pertaining to contracting-related knowledge were skewed toward disagreement with the questions, but not as heavily as the previous demographic section would indicate. A summary list of the researcher's conclusions relating to the perception questions are provided:

1. Approximately half of the civilian institution graduate respondents agree, to some extent, that their job requires a knowledge of contracting-related issues (such as pricing, contract management, contract law, and negotiations). Those civilian institution graduates with a 65XX AFSC felt strongly that their jobs required a knowledge of those contracting-related areas. The AFIT CAM graduates also felt strongly that such areas, as were examined in this section of the questionnaire, were important in their jobs.
2. Civilian institution graduate respondents felt exactly the same as did the AFIT CAM respondents regarding the importance of oral and written communication. Both groups felt it was crucial to their effectiveness in their jobs.

Course Usefulness. Since many of the courses taken in civilian graduate schools have never been used in the graduates' assignments, responses to course usefulness questions tended to skew results towards not useful. A summary list of researcher's conclusions related to the

ranking of the civilian institution curricula, in terms of usefulness, is provided:

1. The quantitative, accounting, and economic courses (i.e., Statistics, Operations Research, Financial Accounting, Managerial Accounting, Economic Foundations, and Microeconomics) were among the least useful of all courses ranked by the entire group of respondents as well as by the group of respondents with a 65XX AFSC. Similarly, AFIT CAM respondents also ranked quantitative courses low; however they ranked economic and accounting courses substantially higher than did the civilian institution respondents.
2. The most useful courses were the general management courses (e.g., Organization Behavior, Management Theory, and Project Management). This is understandable since many of the respondents were majors and lieutenant colonels presently serving as commanders. This fact was proven upon examination of current job titles listed by respondents. Although AFIT CAM respondents felt Organization Behavior was important, many other courses (all contracting-related) were rated as more useful. The civilian institution graduates with 65XX AFSCs also rated the contracting-related courses most useful of all courses rated.
3. The contracting courses were rated much lower by civilian institution graduates than by AFIT CAM graduates and civilian institution graduates with a 65XX AFSC. This is most probably due to the fact that the majority of

civilian institution graduates do not use these subject areas in their jobs; whereas, the AFIT CAM graduates and the civilian institution graduates with a 65XX AFSC use these subject areas extensively.

4. Subject areas identified in Table 3.14, with median scores of two, "Of little use", did not contain material that was relevant to civilian institution graduate respondents in postgraduate assignments.

Open-ended Questions. A summary list of the researcher's conclusions related to the open-ended questions is provided:

1. In general, the civilian institutions' curricula were meeting the needs of the graduate respondents in the field.
2. With such a wide variety of job titles and AFSCs, the areas needing more or less emphasis in the curricula were quite diverse. Tables 3.15 and 3.16 give the alphabetical listings of the subjects needing more/less emphasis in the graduate programs.
3. There was no one dominant subject area which necessitated more/less emphasis in the graduates' contracting-related graduate programs; however, those graduates with a 65XX AFSC overwhelmingly perceived Contract Law and Pricing as needing more emphasis. AFIT CAM survey respondents felt Software Acquisition and Small Business Contracting needed more emphasis in the AFIT CAM curriculum.

4. Although civilian institution respondents felt oral and written communication skills were extremely important in their jobs, not one respondent mentioned oral or written communication in Part IV of the survey instrument.

The conclusions in this section were drawn upon completion of the data analyses performed to answer the four research questions stated in this research study. It is from these conclusions that the researcher has made a number of recommendations.

Recommendations

Based on the research data analysis and the conclusions of that analysis, the researcher has derived several recommendations.

Implementation. 1. AFIT CAM graduates and civilian institution contracting-related graduate program graduates who also have a 65XX AFSC should be assigned a different Advanced Academic Degree code than civilian institution contracting-related program graduates without a 65XX AFSC. This will slow down the increasing number of 1AMH/P officers in the Air Force, thus giving policy makers a realistic figure upon which accurate decisions on 1AMH/P Advanced Academic Degree coded billets and requirements can be made.

2. Once Recommendation One is carried out, all of the civilian institution contracting-related graduate program graduates with no 65XX AFSC should have their Advanced Academic Degree code changed to a different code than that

of the AFIT CAM graduates and civilian institution graduates with a 65XX AFSC.

3. Air Force officers should be offered the AFIT CAM program over other AFIT-sponsored civilian institution contracting-related programs whenever the situation allows. The reason for this is because the AFIT CAM program is oriented more towards the Air Force's and Department of Defense's needs than are the civilian institution programs. This insures the AFIT CAM graduates, upon graduation, are familiar with the Air Force's and DOD's way of doing "business" and need less on-the-job training than civilian institution graduates.

4. Civilian institution contracting-related graduate programs and the AFIT CAM program need to provide more opportunities for graduate students to practice public speaking and hone writing skills. This recommendation is based on the importance these areas have in postgraduate assignments.

5. The quantitative, economic, and accounting courses should be periodically reviewed by administrators to determine the possibility of changes or deletions to reflect the perceived lack of use of the these courses in postgraduate assignments.

These recommendations are for immediate implementation. The next section outlines some areas for future research.

Future Research. The researcher has identified several areas where future research could be conducted.

1. Construct a survey which could be administered to civilian institution graduates, as well as to AFIT CAM graduates, so as to have identical data bases to compare.
2. Construct a survey which could be administered to civilian institution graduates' supervisors, as well as to AFIT CAM graduates' supervisors. The survey may have to be limited to those graduates with a primary and/or secondary/tertiary 65XX AFSC.
3. AFIT faculty/administrators should periodically review civilian institution curricula to analyze strengths and weaknesses of those programs so as to potentially enhance the effectiveness of the the AFIT CAM program.
4. Research projects similar to this effort should be conducted for other graduate education programs within the AFIT School of Systems and Logistics.
5. Compare perceived utility of all or some of the following:
 - A. AFIT CAM program
 - B. AFIT Education With Industry programs
 - C. Naval Postgraduate School, Acquisition and Contract Management Program
 - D. Civilian Institution Contracting-Related Program
6. Periodically duplicate this research effort to obtain current feedback from graduates in the field for comparison and revision of the AFIT CAM program.

7. Future efforts in this research area should be made to develop a sampling plan which will lend itself to inferential projections to the overall population being surveyed.

8. Limit a survey to 1AMH/P holders currently in 65XX AFSC positions. Determine if the civilian institution graduates are better prepared than AFIT CAM graduates to hold the available 1AMH/P positions.

Final Thoughts. As a result of this research effort, the author has shown that a civilian institution contracting-related graduate program is useful. The respondents with a primary AFSC of 65XX have felt the programs were quite useful, but the non-65XX (most respondents fell into this category) respondents did not find the overall program useful. While non-65XX graduates did find certain courses useful to them (general management courses), many courses were never used. Many respondents answered the open-ended questions "N/A" because they had no experience upon which to adequately answer the questions.

The overwhelming feeling the author received from this research effort is the AFIT CAM program is more useful, more Air Force oriented, and more demanding than the civilian institution contracting-related programs. But, the civilian institution program graduates are somewhat of a threat to the AFIT CAM program graduates. If these civilian institution graduates continue to receive 1AMH/P Advanced

Academic Degree codes upon completion of their graduate programs, the number of 1AMH/P officers in the Air Force will continue to increase at a much faster pace than the number of available 1AMH/P slots. Although there are 255 active duty Air Force officers with a 1AMH/P code, many of those have never assumed, and probably will never assume, any type of contracting-related position. So when AFIT tries to obtain more graduate slots it has a difficult time pleading its case when the figures show there are already too many available officers with a 1AMH/P code. Also, the AFIT CAM program is a more demanding program (more hours and a thesis requirement) than the civilian institution contracting-related programs; however, the graduates of the AFIT CAM program and the civilian institution graduates receive the same 1AMH/P code.

This research effort uncovered the fact that most of the civilian institution graduate program graduates with 1AMH/P codes do not function in contracting or manufacturing (65XX AFSC) positions. If these civilian school graduates are earning the 1AMH/P coding just as a "square-filler" for their military career, the impact on the AFIT CAM program could be devastating. Since AFIT CAM billets are allocated based on field requirements and coded personnel availability, the 255 officers with 1AMH/P codes is quite deceptive. Differentiation must be made between 65XX and non-65XX personnel with 1AMH/P codes.

APPENDIX

SURVEY INSTRUMENT

10 JUN 1985

REPLY TO
ATTN OF: LSH/Capt Graham/AUTOVON 785-6569

SUBJECT: Perceptions of Civilian Institution Contracting-Related
Graduate Program Survey

TO: Civilian Institution Contracting-Related Graduate Program
Graduates

1. There are currently 145 active duty Air Force graduates of civilian institution contracting-related graduate programs. As part of an Air Force Institute of Technology thesis, Capt Graham wants to ascertain the extent to which these programs are meeting the on-the-job needs of the Air Force. The attached questionnaire is intended to determine how past graduates feel about the usefulness of the contracting-related graduate programs in postgraduate assignments. The survey has been reviewed by USAF/MPC and has been designated by USAF Survey Control Number 85-64.

2. Your participation is entirely voluntary. As a past graduate of a contracting-related graduate program, your feelings are extremely important. A valid cross-section of attitudes is possible only with the generous cooperation of participants like you.

3. Do not discuss your responses with any other survey participant. Please be candid in your responses.

4. Your participation in this survey will be sincerely appreciated. Be assured that there will be no attempt to pair your responses with those of any other survey participant. The researcher is interested only in the collective responses of graduates, not individual attitudes. Your responses to the questions will be confidential and known only to the researcher.

5. Please return the completed survey in the enclosed pre-addressed envelope no later than 1 Jul 85.



WILLIAM A. MAUERS
Associate Dean
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

GENERAL INSTRUCTIONS

1. This questionnaire has four parts to complete. Each part has specific instructions. Your responses to Part I, Part II, Part III, and Part IV should be answered DIRECTLY on the questionnaire. The questionnaire should be mailed back in the pre-addressed envelope.
2. Answer the questions only as they relate to the civilian institution contracting-related program you attended, not other graduate education programs you might have attended.

PART I

DEMOGRAPHICS

Please answer the following questions by circling the correct response and/or filling in the space provided, as appropriate.

1. My contracting-related graduate degree was obtained from (specify graduate school) _____.
2. I graduated from my contracting-related graduate program in (specify year) _____.
3. My contracting-related graduate degree was obtained:
 - a. Off-duty.
 - b. Through an AFIT-sponsored civilian institution program.
 - c. Other(specify) _____.
4. My present rank is _____.
5. The command I am presently serving in is _____.
6. My current duty AFSC is _____.
7. My secondary/tertiary 65XX AFSC is (specify N/A if you have no secondary/tertiary 65XX AFSC) _____.
8. My current job title is _____.
9. The number of contracting-related duty assignments I have served in, since graduation from my contracting-related graduate program, is _____.
10. What type of contracting have you been involved in since graduation from your contracting-related graduate program?
 - a. Base
 - b. Central
 - c. Systems
 - d. All of the above
 - e. None of the above
 - f. a and c
 - g. a and b
 - h. b and c
11. A thesis in my contracting-related graduate program was
 - a. Mandatory
 - b. Optional and I elected to do a thesis
 - c. Optional and I elected NOT to do a thesis
 - d. My graduate program was not a thesis program.

PART II

PERCEPTIONS

The statements in this section are concerned with your perceptions of the requirements of your post-graduate assignments and usefulness of your contracting-related graduate program in those assignments. Please respond to each statement based upon:

1. Your current job, if it is a 65XX position, OR
2. Your most recent 65XX job, if you are not in a 65XX job, OR
3. Your current job, if you have not held a 65XX position.

Please use the following response scale for each statement. PLACE YOUR RESPONSE TO EACH STATEMENT IN THE BLANK SPACE PROVIDED IN FRONT OF THE STATEMENT.

- A. STRONGLY DISAGREE
- B. DISAGREE
- C. SLIGHTLY DISAGREE
- D. UNDECIDED/DON'T KNOW
- E. SLIGHTLY AGREE
- F. AGREE
- G. STRONGLY AGREE

- ____12. My job requires the ability to understand the functions of the contracting manager.
- ____13. My job requires a working knowledge of the legal framework for contracting in the public sector (e.g., legal challenges originated in the exchange between private sector suppliers and government contracting agencies).
- ____14. My job requires an understanding of effective methods and selection of production alternatives.
- ____15. My job requires a working knowledge of pricing.
- ____16. My job requires a working knowledge of negotiations.
- ____17. My job requires a knowledge of current and significant issues in contracting.
- ____18. My job requires an in-depth knowledge of the laws and legal processes associated with government contracting.
- ____19. My job requires the ability to understand research methodologies.

- | | |
|----|----------------------|
| A. | STRONGLY DISAGREE |
| B. | DISAGREE |
| C. | SLIGHTLY DISAGREE |
| D. | UNDECIDED/DON'T KNOW |
| E. | SLIGHTLY AGREE |
| F. | AGREE |
| G. | STRONGLY AGREE |

- ____20. My job requires the ability to VERBALLY inform, convince, and/or persuade individuals relative to ideas, decisions, and concepts.
- ____21. My job requires the ability to communicate in WRITING in such a manner as to inform, convince, and/or persuade individuals relative to ideas, decisions, and concepts (such as in the preparation of reports, correspondence, etc.).
- ____22. My contracting-related graduate degree adequately prepared me to understand the procurement of major systems.
- ____23. I feel that I am better equipped to solve on-the-job problems because of my graduate contracting-related education.
- ____24. My graduate contracting-related education will be of more value in future assignments than it has been in my current assignment.
- ____25. I feel that the value of my graduate contracting-related education has increased over time.
- ____26. I would encourage other officers to attend the contracting-related graduate program I attended.
- ____27. I feel that my graduate contracting-related degree is useful to the Air Force.

PART III

COURSE USEFULNESS

Questions 27 - 46 identify subject matter areas found in contracting-related graduate programs. For each subject matter area, circle the letter of the statement which reflects your experience and usefulness assessment as detailed in the box below.

- A. I HAVE NOT HAD MATERIAL IN THE SUBJECT MATTER AREA.
- B. I HAVE HAD THE MATERIAL BUT FOUND IT OF LITTLE USE.
- C. I HAVE HAD THE MATERIAL AND USE IT SOME.
- D. I HAVE HAD THE MATERIAL AND USE IT EXTENSIVELY.
- E. I HAVE HAD THE MATERIAL AND FEEL IT IS MANDATORY FOR MY JOB.

28. Financial Accounting	A	B	C	D	E
29. Managerial Accounting	A	B	C	D	E
30. Economic Foundations	A	B	C	D	E
31. Microeconomics	A	B	C	D	E
32. Management Theory	A	B	C	D	E
33. Statistics	A	B	C	D	E
34. Quantitative Methods/ Operations Research	A	B	C	D	E
35. Information Systems	A	B	C	D	E
36. Marketing	A	B	C	D	E
37. Organizational Behavior	A	B	C	D	E
38. Procurement Management	A	B	C	D	E
39. Incentive Contracts	A	B	C	D	E
40. Contract Negotiation	A	B	C	D	E
41. Contract Law	A	B	C	D	E

- A. I HAVE NOT HAD THE MATERIAL IN THE SUBJECT MATTER AREA.
- B. I HAVE HAD THE MATERIAL BUT FOUND IT OF LITTLE USE.
- C. I HAVE HAD THE MATERIAL AND USE IT SOME.
- D. I HAVE HAD THE MATERIAL AND USE IT EXTENSIVELY.
- E. I HAVE HAD THE MATERIAL AND FEEL IT IS MANDATORY FOR MY JOB.

42. Systems Procurement and Project Management	A	B	C	D	E
43. Pricing	A	B	C	D	E
44. Materials Management	A	B	C	D	E
45. Production/Operations Management and Quality Assurance	A	B	C	D	E
46. Current Issues in Procurement and Materials Management	A	B	C	D	E
47. Case Studies in Procurement/ Contracting	A	B	C	D	E

PART IV

OPEN-ENDED QUESTIONS

Please answer the following questions in the space provided after each question.

48. Based on your field experience, what subject areas do you feel were MOST important or necessitate additional emphasis in your graduate contracting-related program?

49. Based on your field experience, what subject areas do you feel were LEAST important or necessitate decreased emphasis in your graduate contracting-related program?

THANK-YOU FOR YOUR COOPERATION IN COMPLETING THIS QUESTIONNAIRE.

PLEASE ENCLOSE THE QUESTIONNAIRE IN THE RETURN ENVELOPE AND PLACE THE ENVELOPE IN OUTGOING OFFICIAL DISTRIBUTION.

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

AD-1161769

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS NONE			
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.			
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE						
4. PERFORMING ORGANIZATION REPORT NUMBER(S) AFIT/GLM/LSQ/85S-29			5. MONITORING ORGANIZATION REPORT NUMBER(S)			
6a. NAME OF PERFORMING ORGANIZATION School of Systems and Logistics		6b. OFFICE SYMBOL (If applicable) AFIT/GLM	7a. NAME OF MONITORING ORGANIZATION			
6c. ADDRESS (City, State and ZIP Code) Air Force Institute of Technology Wright-Patterson AFB, Ohio 45433-6583			7b. ADDRESS (City, State and ZIP Code)			
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER			
8c. ADDRESS (City, State and ZIP Code)			10. SOURCE OF FUNDING NOS.			
11. TITLE (Include Security Classification) See Box 19			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT NO.
12. PERSONAL AUTHOR(S) Thomas S. Graham, B.S., M.S., Capt, USAF						
13a. TYPE OF REPORT MS Thesis		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Yr., Mo., Day) 1985 September		15. PAGE COUNT 115
16. SUPPLEMENTARY NOTATION						
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)			
FIELD 05	GROUP 01	SUB. GR.	Graduates, Education, Schools, Procurement, Acquisition			
19. ABSTRACT (Continue on reverse if necessary and identify by block number)						
<p>Title: A COMPARATIVE STUDY OF THE PERCEIVED USEFULNESS OF CIVILIAN INSTITUTION CONTRACTING-RELATED GRADUATE PROGRAMS BY GRADUATES AND THE PERCEIVED USEFULNESS OF THE AFIT CAM PROGRAM BY GRADUATES</p> <p>Thesis Advisor: Wendy L. Motlong, Captain, USAF Instructor, Quantitative Contract Price Analysis</p> <p style="text-align: right;"> <i>Approved for public release</i> LAW, AFB 190-4 LYNN E. WOLVER 11 Sept 85 Dean for Research and Professional Development Air Force Institute of Technology (AFIT) Wright-Patterson AFB OH 45433 </p>						
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS <input type="checkbox"/>			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED			
22a. NAME OF RESPONSIBLE INDIVIDUAL Wendy L. Motlong, Captain, USAF			22b. TELEPHONE NUMBER (Include Area Code) 513-255-6280		22c. OFFICE SYMBOL AFIT/LSQ	

Contracting officers must be educated on the principles of acquisition management and must know how their jobs relate to the well-being of the United States Air Force and to the defense of the United States and our allies. This need for educated, well-trained contracting officers is met by the Air Force Institute of Technology (AFIT) Contracting and Manufacturing resident program and by civilian institution contracting-related programs. This research study focussed on a comparison of the two different contracting-related graduate programs. A background of the AFIT Contracting and Manufacturing program and a background of each of three civilian institution contracting-related graduate programs were presented. Then, the results of a survey of active duty Air Force civilian institution contracting-related graduate program graduates were analyzed. These results were then compared to results of a previous survey of AFIT resident program graduates. The two groups were compared in four sections: Demographics, Perceptions, Course Usefulness, and Open-ended Questions. Lastly, conclusions and recommendations based upon the data analysis are presented.